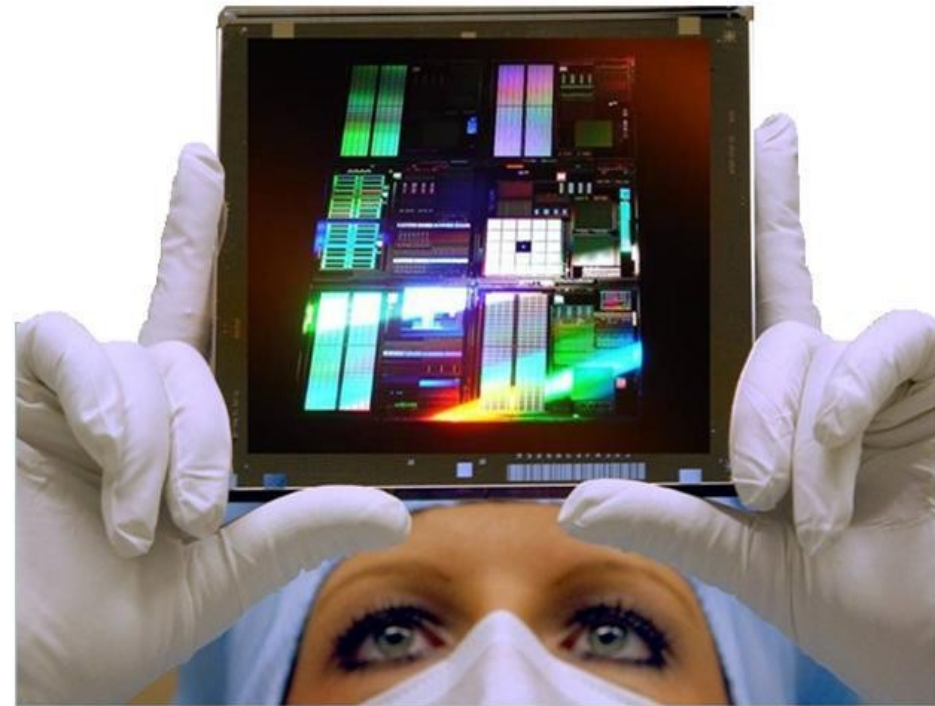


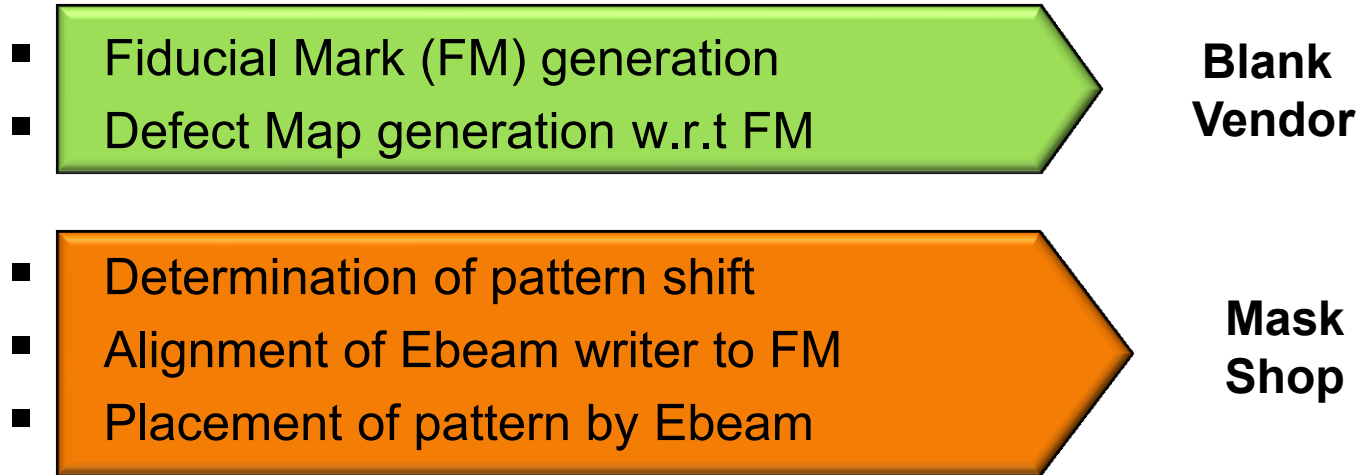
Blank Defectivity Mitigation Process Flow and Gaps

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Mask TWG



Requirements on Blank Defect Mitigation Process

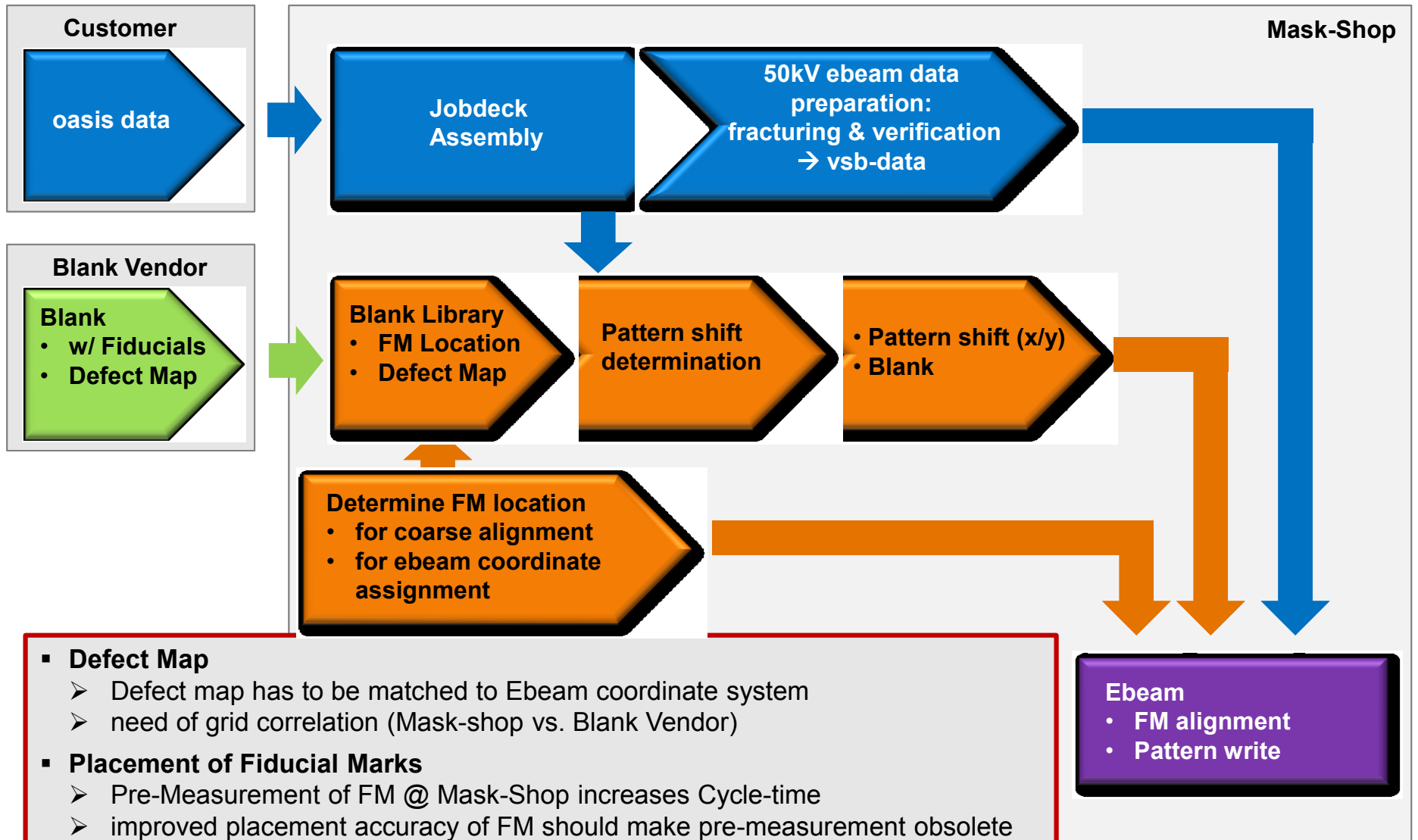
- Enabling technologies have to be in place w/ required accuracy:



- Implementation of enabling technologies into Mask process flow w/
 - using of “standard” mask manufacturing flow
 - High degree of automation to reduce risk of failure
 - No adder for cycle-time



Defect Mitigation Flow



▪ Defect Map

- Defect map has to be matched to Ebeam coordinate system
- need of grid correlation (Mask-shop vs. Blank Vendor)

▪ Placement of Fiducial Marks

- Pre-Measurement of FM @ Mask-Shop increases Cycle-time
- improved placement accuracy of FM should make pre-measurement obsolete

▪ Ebeam alignment & Pattern write

- Standardized Fiducial Mark set (size, position) needed
- Automated registration of needed parameters on ebeam tool

Gaps for Pattern-Shift

- Standardized FM set compatible with Blank defect inspection tools and ebeam writers
- Improved placement accuracy of FM to avoid need for pre-measurement of FM location
- Availability of defect maps relative to FM marks from Blank vendor
- Correction of Defect map to ebeam grid necessary via
 - (1) grid correlation Mask-shop vs. Blank-Vendor or
 - (2) pre-measured FM location provided by Blank Vendor
(pre-measurement of FM location at Mask-shop less desirable)
- Setup of automated interface for registration of needed parameter to ebeam writer
- Functionality on ebeam writer to implement pattern-shift relative to FM w/o change of single chip placements (e.g. single shift parameter)